

The *C. Salar* is popularly called "salmon trout" by the colonists, and is recognised from the first by its smaller size and rows of large round brass-like spots on the sides. The species was separated, by Sir J. Richardson, from the former on account of the differences in the number of the fin rays, the spotting of the body, and the greater diameter of the eye as compared with the length of the head and the distance between the orbits. All these characters Professor M'Coy proved to be merely the characteristics of the young fish of the *C. Georgianus*.

The *C. Truttaceus* of Cuvier was mainly characterized by the posterior edge of the preoperculum not being denticulated; and this also was proved by the demonstration of the characters in several specimens to be a character of the very young of the same species, *C. Georgianus*, with which it also should, as well as the *Perca Trutta* of Cuvier, be united.

The very young when examined alive have the caudal fin yellow with a black margin. These colours fade quickly in spirit or on dried skins, so this colouring noted by Cuvier on a drawing from life of a fish of which he had never seen a specimen, gave rise to the species *Perca marginata*, which, as all the other characters also are those of young *Centropristes Georgianus*, Professor M'Coy proposed to consider a synonym of that species, thus reducing, by extensive observations on recent specimens, six supposed species of Australian fish to one.

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ART. XXXVIII.—*The Wealden Formation of Europe, as Illustrated by the Physical Features of Port Phillip Bay.* By THOMAS HARRISON, ESQ.

[Abstract of Paper read Oct. 31st, 1864.]

The characteristics of the Wealden Formation, in reference to its probable history, its geographical position, geological structure, and the peculiarity of its brackish and fresh water beds, intercalated between two extensive marine formations, were briefly and generally described.

The hypothesis of Lyell, of a gradually sinking delta, was briefly reviewed, and the points noted in which some of the phenomena observed were not satisfactorily accounted for by such a cause.

The views of Mr. Searles Wood and others, that the deposits had taken place in closed basins, and the presumptive evidence brought forward in support of such, was next referred to. This portion of the paper was illustrated by maps showing the several configurations of land and water in England, France, and Spain during the carboniferous, Jurassic, and Cretaceous periods. The partially enclosed area of Port Phillip Gulf presents some resemblance to such closed basin (as above alluded to), and the analogy would be complete if we suppose communication with the sea, through its present narrow outlet, obstructed by the formation or elevation of a bar of land connecting Point Nepean with Point Lonsdale, and so converting the existing gulf into an inland lake, which would continue salt or become brackish, or even fresh, in proportion to the ratio of the river supplies of fresh water to the evaporation.

The geological history of the Victorian tertiaries, in their alternate elevations and depressions, would further illustrate some, if not all, of the peculiar phenomena of the English Wealden formation.

In Victoria, such vertical motions of the surface appearing in some measure to be connected with the various basaltic outbursts incidental to so many parts of the Colony, it was suggested that, possibly in Great Britain, the continuous elevation of the land from the Old Red Sandstone to the end of the Oolitic period, and its subsequent depression during the Cretaceous era, and lastly, its final elevation after the Tertiary epoch, might be traced to be not altogether unconnected with certain trap and basaltic eruptions on the western coasts in Scotland.

As presumptive evidence of such being the case, it was pointed out that the Skuir of Eig (a vast dyke of greenstone) reposes on the remains of an Oolitic forest, and portions of the trap rocks forming the Giant's Causeway are found to overlie rocks of the Cretaceous age.

The general scope of the paper was to suggest, by analogy, possible causes which may be inferred from existing phenomena in other places, particularly around Melbourne, in explanation of the yet somewhat obscure agencies concerned in the formation of one series of the most interesting, and to some extent, anomalous strata of the Wealden.